The Effects of Auditory Enrichment on the Behaviour of Dairy Cows (Bos taurus).

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The Effects of Auditory Enrichment on the Behaviour of Dairy Cows (*Bos taurus*)

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These results suggest that auditory stimulation may provide beneficial effects including a reduction in stress related behaviours and an increase in positive social interactions in Holstein-Friesian dairy cows. However, periods without auditory stimulation are also beneficial to enhance rest and rumination.

BACKGROUND

- On exposure to classical music, cattle have previously been shown to;
  - enter milking parlours more frequently (Uetake, Hurnik and Johnson, 1996)
  - produce greater milk yields (Evans and Albright, 1989)
  - have quicker milk let down speeds (Kivici *et al.,* 2013)
- Cattle enter milking parlours more readily when exposed to country music (Wisniewski, 1978),
- Calm talking from stock people encourages positive social behaviours (Wablinger *et al*., 2002)

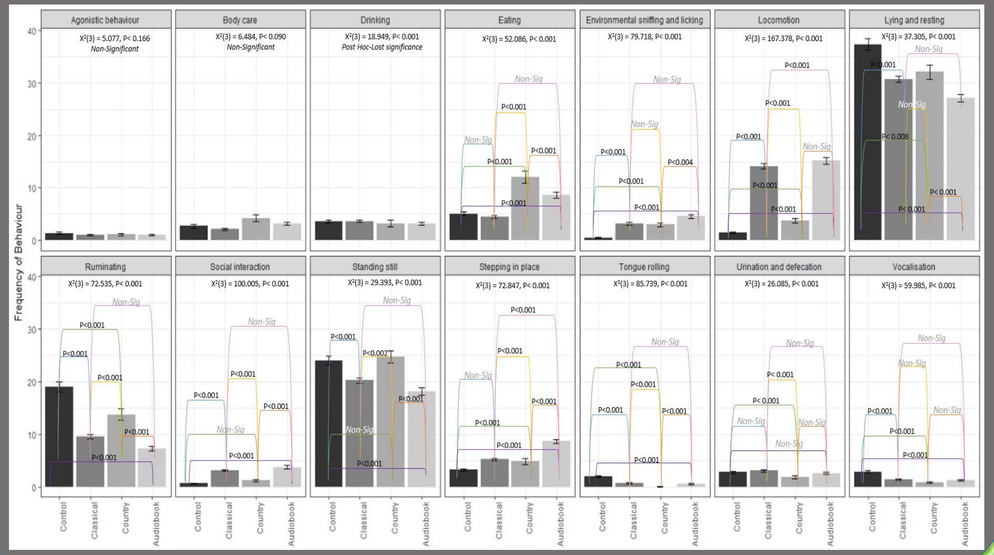
- *Aim and Objectives:* To investigate the effects of auditory stimulation via classical music, country music and audiobooks on the behaviour of Holstein-Fresian dairy cows
  - To establish whether the presence of auditory enrichment will increase positive behaviours in dairy cattle.
  - To investigate whether the presence of auditory stimulation will reduce the frequency of abnormal/negative behaviours in dairy cattle.

METHODS

- 70 Holstein Friesian dairy cattle were employed as subjects (all year round calving herd; average yield of 8900 litres).
- The cows were mixed parturition and were aged between two and thirteen years.
- Cows were housed in freestall barns with *ad lib* access to food, freestall units and a walkway.
- Cattle were exposed to four auditory conditions;
  - A no auditory control,
  - Classical music (The Classical Chillout Gold Collection),
  - Country music (John Denver- Legends),
  - Audiobook (Harry Potter and the Philosophers Stone, narrated by Stephen Fry).
- Cows were exposed to each condition for 4 hours a day for 3 days (intervening period of 4 days between conditions).

- Behaviours were recorded every 10 min throughout the 4 h using instantaneous scan-sampling
- Behaviours were recorded using a camera (Sony CS405 Handycam with Exmore R CMOS Sensory).
- Ethogram utilised to identify the cows' behaviours (Redbo, 1990; Krohn, 1994; Siivonen *et al.,* 2011)

RESULTS



CONCLUSIONS

Our study provides support for the use of auditory stimulation as environmental enrichment for dairy cows and suggests that auditory enrichment may have application in their management, however periods of no auditory stimulation may also be beneficial to enhance resting and rumination behaviour.

APPLICATION & IMPACT

This is the first study to our knowledge to explore the effects of a range of music conditions as well as audiobooks on dairy cow behaviour.

- Intensively kept cattle have demonstrated more herd aggression (Keyserlingk *et al*., 2009). Use of classical music and audiobooks encouraged more positive social interactions and may be beneficial in intensive housing.
- Feeding has an important role in maintaining cow body condition, health and milk production (Dado and Allen, 1994; Grant and Albright, 2000). Country music and audiobooks increased feeding and may have application to enhance production in dairy cows.
- Resting and rumination can enhance productivity (Krawczel and Grant, 2009; Schirmann *et al.,* 2009) and increased resting and rumination were seen during the control condition.
- The most effective approach to promote cow production and welfare may involve a combination of auditory stimulation to encourage feeding and positive social behaviour, and periods of no music to promote resting and rumination.